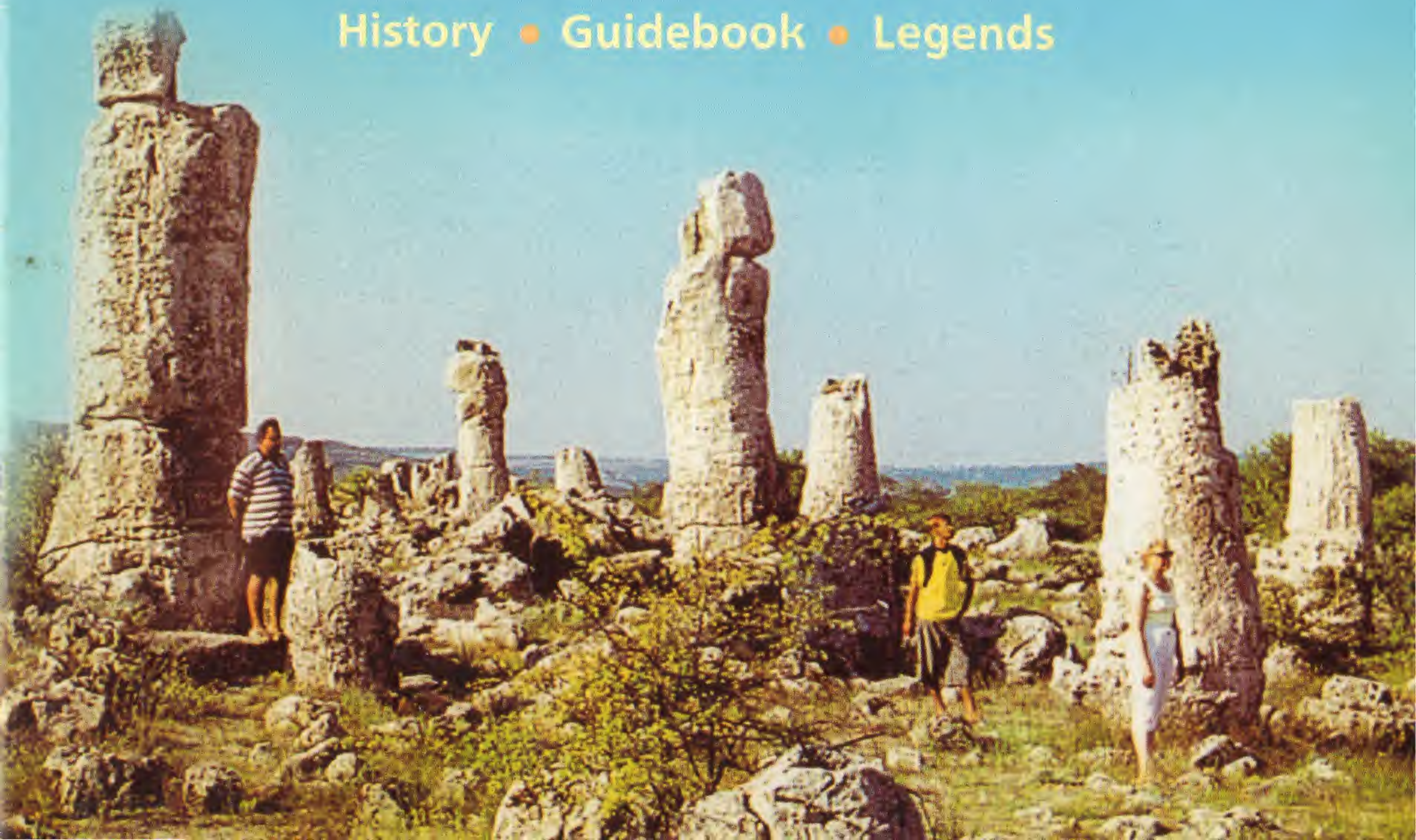


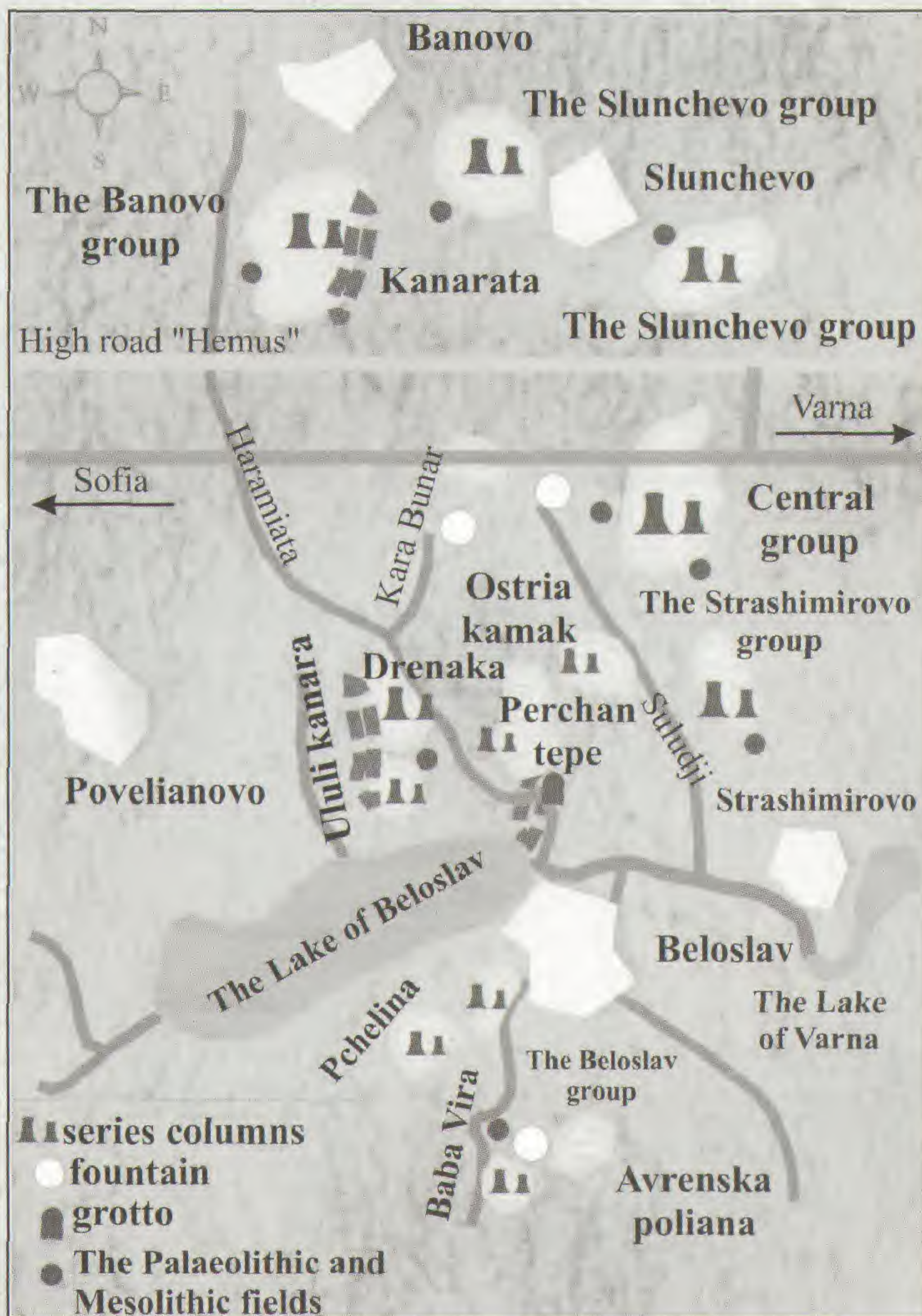
Ara Margos

# THE FOSSIL FOREST

History • Guidebook • Legends









*Arra Margos*

# THE FOSSIL FOREST

Varna  
2003





The group of stone columns during the visit of the English geologist Spratt in 1855 (engraving)



## A Remarkable Natural Nook

On the old mineral-pitch road to Sofia, about 18 kilometers west of Varna, something unexpected and extraordinary makes the traveller come to a sudden halt. In front of his gaze reveals a view that can only be described as a marvel of Nature: cylindrical stone columns, rising high amidst a small sandy desert, surround both sides of the highway. Tempted to walk among the columns, on the golden sandy ripples drifted by the wind, the traveller is ravished by gradually growing admiration and overwhelmed by the impression of moving through a petrified woodland. What he has come to is the famous 'Fossil Forest', called 'Pobittite Kamani' (The Nailed Stones) in Bulgarian, and also known as 'Dickilitash'. The stone columns, soaring up to 5-6 m, with thickness from 0,50-0,60 m to 2,5 m, are distinguished by porous, honeycomb surface which makes them even more beautiful when looked at a close distance. Most of them have smaller or larger cavities and horizontally arranged fissures. The columns are made of calcareous zoic sandstones containing a large amount of fossils: nummulites and molluscs, such as mussels, spirivalves and periwinkles. The shifting sands round the columns and the scanty vegetation, which almost dries up in the summer, give the area an entirely desert outlook.

At first sight it's really hard to assume that these picturesque stone pillars are created by the greatest of all masters - Mother Nature - just because of their outstanding resemblance to a fabulous petrified forest or the ruins of magnificent antique edifices. People have used their imagination to invent many a curious stories about 'the Fossil Forest'. Here is one of the most popular ones:

'Once upon a time, many years ago, a large centuries-old forest used to spread far and wide over the area. Crystal-clear brooks used to flow through tufty glades, strewn with lovely sweet-scented flowers, made their way through dense shrubs and high ferns and hurried downhill to the lake. The whole vicinity resounded with the songs of myriad birdvoices.





A rebellious haidouk band, led by their voivode, was hiding in the thickest part of the forest. They were all young lads, defenders of the people, protecting them from the suffering, hardships and yoke of slavery. One day there appeared a Turkish posse, determined to chase the rebels away. They came down to the voivode's village, set his house on fire and urged his wife, with a little child in hands, to show them the hiding place of her husband and his men. In spite of all threats and admonitions she refused decisively and remained unbending and inexorable. The brutal chieftain of the posse flew out at the infant and cut him into half with his yataghan. The bereaved mother, grief-stricken and gone mad with despair, flung herself over the sabred child. All of a sudden the sky became overcast with dense clouds. Lightnings like fiery tongues flashed across the sky and a fierce storm shook the ground. The forest groaned with sorrowful wails. The haidouk rifles fired and the voivode with his lads came vehemently over the posse. The bloodshed was terrible and everyone died in the ferocious massacre. All through the night the tempest raved furiously. In the morning, when the first sun's rays lit the earth, they revealed the miraculous sight of stone tree-trunks set close to each other. The streams and the springs had dried up. Everything seemed arid, silent and desolate. In this night of horror the forest had turned into stone.'

**Columns from the  
Central group**





Wondrous beautiful is 'the Fossil Forest'! These magnificent columns evoke all sorts of feelings and reflections in those who have the opportunity to visit them. Both in the daylight when we watch this weird play of Nature or on a clear moonlit night when the columns cast their dark bizarre shadows and increase their mysteriousness to an even larger degree. Was this marvellous natural phenomenon as still and lifeless as it's today or was it once bubbling with life and only some elemental disaster brought down death and destruction? The columns stand still and silent, guarding jealously their enigma. However, the restless human thought, which is known to admit no limits, has made an effort to unravel this mystery, as well as lots of others, and has probably found some clues to it, too.



"Pobiti Kamani" an engraving, from Viktor Teplyakov's book (1828)

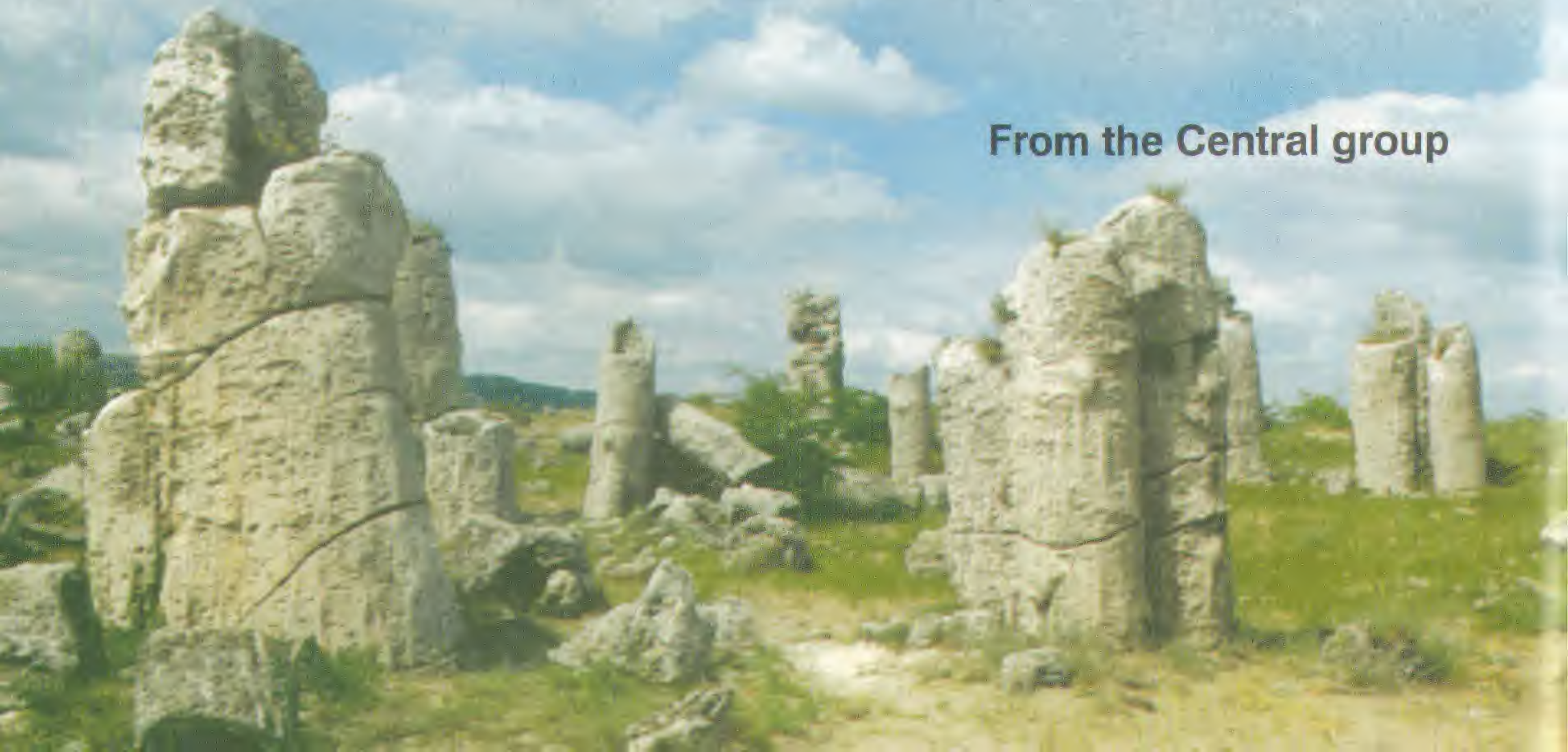


## The Mystery of the Stone Columns

How were these unusual stone formations created? Many eminent scholars have tried to solve and unriddle the secret of 'the Fossil Forest'. Still at the time of the Russian-Turkish war Victor Tepliakov - a war-correspondent in the army of general Dibich - became deeply interested in them. In his book 'Letters from Bulgaria', he has rendered a poetic description of the Dickilitash columns, which he called 'the Gebedje Ruins', by the name of the nearby former village of Gebedje, present-day town of Beloslav.

'Having passed a couple of versts, suddenly I came across a large sandy platform with six gray stone columns arranged symmetrically in a straight line. The loud exclamation I gave out was the first sign of my astonishment provoked by this sight. Two hundred sazhen further on I pulled my horse again, since the spacious field of columns, similar to the previously seen ones and spreading in front of my gaze, made my amazement tenfold bigger.

**From the Central group**





Indeed it's hard to convey the whole stream of thoughts, conjectures and impressions which these colossal remains of ancient times called forth in my mind at this very moment. All the thousands of miraculous columns astound us with their weird forms. What kind of people were the creators of these superb relics?'

Assuming that the columns were ruins left from ancient edifices, Tepliakov did not exclude the possibility that they might represent natural formations.

The Englishman William Hamilton was the first scholar, who in 1854, described the Dickilitash columns as a natural phenomenon. At the time of the Crimean war ( 1853-1856 ), 'the Fossil Forest' was also visited by the English geologist T. Spratt who wrote the first detailed scientific publication about it, confirming that it was a geological creation, formed by the effect and as a result of the combined wind, sand, water and temperature activities. Lots of other renowned representatives of science have expressed various suppositions about the process of these columns' formation. The geologists Franz Toula and George Zlatarski presume that they were moulded by the impact of erosive activity, exerted upon the rocks in the vicinity. Professor Petko Backalov's viewpoint is that the columns were initially formed by the sea and later on put into final shape by the rain and the wind. These scientists believe that the rainwater performed an especially important role in this respect, thus contributing to the present-day picturesque view of 'the Fossil Forest'. Herman Shkorpil assumes that the columns were made out of calcareous (limestone) concretions, interposed within the sandstone, which were

### **Monumental column**





subsequently liberated by the erosion. According to the German scientist Gellert they were formed as a result of the dissolving and denuding water activity and can be regarded as a Karst phenomenon moulded into their ultimate shape with the active participation of the wind.

Radically different is professor Vassil Radev's assertion according to which the stone columns represented primarily coral structures. In the Lutecium period when the climate was almost tropical, coral colonies began to grow on the comparatively shallow sea-bottom. They developed vertically towards the surface of the water due to the heliotropic influences. Meanwhile the waves in the so-formed reef dragged and accumulated quartz sand, which gradually preserved and converted the colonies from aragonite-coral into a limy-sandstone formation, thus destroying the fine structure of the separate corals. The sandy ground on which the columns stand as well as their exclusively regular form come into basic contradiction with this hypothesis. It's mainly owing to the fact that the coral reefs which usually reach enormous dimensions cannot be adjusted firmly to a sandy sea-bottom and, on the other hand, no other reefs with an even approximately similar shape can be witnessed anywhere else in the world.

Another biogenetic hypothesis about the origin of 'the Fossil Forest' has been recently formulated by the Georgian geologist Davitashvilli and supported by his Bulgarian colleague Krassimira Zaharieva. In their view the stone columns are distinguished by a palaeobiological character, i. e., they were formed with the active participation of certain vegetable species. Round big perennial plants from the genus of the tropical mangroves were formed incrusting and gradually growing concretions. After the plants decayed, they grew hollow and inside the putrid trunks remained cavities of the kind that most columns have today. As an argument in support of their affirmation, the authors of this hypothesis adduce fragments of petrified trees (wood-agates) that can be found in the vicinity of 'the Fossil Forest' nowadays. The Czech scientists Yaroslav Skacel and Vladimir



Panosh, who also sustain the palaeobiological origin of 'the Fossil Forest' use as an evidence the calcareous siphon-like shells of the woodpunch-spirivalves from the Teredo genus.

However, this hypothesis has its weak aspects, too. As emphasized by the Bulgarian scientist Petko Mandev, such accumulation of calcareous sandstone round vegetable species is unfeasible due to the fact that these species are not able to outlive the period of sedimentation. Apart from that, the quickly buried vegetation does not putrefy, it actually becomes carbonized. Moreover, with the recent discovery of the multistoreyedly structured columns, divided into horizontal limestone banks, in the vicinity of 'Drenaka' (the Cornel-Tree Grove ), the hypothesis about the palaeobiogenic origin of the columns remains beneath criticism and appears unrealistic and unsubstantiated.

At the time being one of the most popular hypothesis about the origin of 'the Fossil Forest' belongs to the Bulgarian geologists Peter Gochev and Stephan Bonchev. From their point of view in the neozoic period, and more precisely in the Tertiary, about 50 million years ago, in these parts there used to spread a sea, called by the geologists Lutecian. In the course of time three separate strata were deposited on the bottom of the sea. The lowermost stratum consisted of grayish-yellow marl seams dragged by the rivers flowing into the shallow littoral. Upon the first one settled the second stratum, made up of several dozen metres quartz sand, containing lots of nummulites. The upmost stratum, formed on top of the previous one consisted of thick limestone, rich in various fossils. A few million years later, the land rose higher while the sea receded as a result of the epeirogenic movements of the earth crust. Exposed to the impact of heat and cold and the erosive water activity, the topmost limestone layer began to disintegrate.

The rainwater passing through it became saturated with limestone and continued its way, percolating through the lower sandy layer in a vertical downward direction. The dissolved limestone gradually accumulated into the canals made by the water, welding the sandgrains firmly together. This process led to the formation



of hollow stone columns within the second sandy layer. In the course of time the upmost limestone stratum was entirely destroyed and washed away by the rainwater while the sand beneath was blown away by the winds. Only the stone columns remained rising up above the ground. The authors of this hypothesis conclude that the stone columns were therefore moulded in a similar to the cave stalagmites way, distinguished by the peculiarity that instead of a cave cavity they were formed in the sand as a sort of ground stalagmites. They consider their



### **Nummulites**

assertion confirmed by the cylindrical shape, the inner cavities and the concentric stratification of the limestone layers. They also believe that the wind and the rainwater added up to the final smoothing out of the column surfaces. Notwithstanding its positive aspects this hypothesis has a number of weak points, too. First of all, it's hard to explain the perpendicular penetration of the rainwater through the sand and its vertical infiltration, since in this case we are obliged to take into consideration not only the law of gravity but the laws of hydrostatic pressure and capillarity, as well. As a conclusion it's necessary to point out that not one of the numerous hypotheses about the origin of 'the Fossil Forest' gives a final explanation to the columns' formation and they still keep on guarding their secret as jealously as before.

**A colossus from Dualgitte  
Kamani (the High Rock) site**





## Location of the Stone Groups

The cylindrical stone columns in the vicinity of 'the Fossil Forest' are arranged into several groups, situated on an area of about 50 square kilometers between the town of Beloslav, the villages of Strashimirovo, Slunchevo, Banovo and the Devnya living quarters of Povelianovo. In the south they reach up to the Avren plateau while in the north they can be seen as far as the Frangen plateau. In eastern and western direction the area, occupied by the columns, spans a five-kilometer-wide belt which is split into half by the road from Sofia to Varna and the 'Hemus' highway.

**Columns from the Beloslav group**



**Ostriyat kamak group  
of columns**







**1. Columns from the Strashimirovo group**

**2. Columns from the Slunchevo group.**

**3. Drenaka**

**4. The Banovo group.**

**5. Drenaka**









The territory of the whole region is deeply cut through by four ravines: 'Haramiata' (Haidouks' ravine) and 'Karabounar' (The Black Well) in its western part, 'Souludjitte' in the eastern, and 'Baba Virra' (Grandma Virra) in the southern part. The brooks, running through these ravines, flow into the canal connecting the Varna and the Beloslav lakes.

The major and more interesting groups of columns are the following ones:

1. The Central group known as 'the Fossil Forest'.
2. The Strashimirovo group.
3. The Slunchevo group.
4. The Banovo group.
5. 'Souludjitte' at Pertchan teppe (the Pertchan Hillock).
6. Ullouli Kanara at Drenacka (the Cornel-Tree Grove).
7. The Beloslav group.
8. Avren glade.

**Ululi Kanara**





The Central group is the largest and the best preserved one. It's situated right next to the Varna-Sofia macadam road and it's also the most popular and often visited tourist destination. A great part of the visitors become acquainted and get in touch with this extraordinary natural phenomenon exactly by seeing and walking among the formations of this group. Several hundred of stalwart stone columns rise above the sandy ground, creating an unique and unforgettable sight. Immediately to the west of this group is located the 'Souludjite' ravine, buried in luxuriant verdure: centuries-old lime and wild pear trees, yoke-elms, hornbeams and lots of other trees with ivy and creeper-covered trunks. In the springtime the first flowers coming up the ground are the snowdrops, followed by the orange-yellow crocuses and the fragrant violets. An old stone fountain is half-hidden under the tufty branches of some old willows. On a hot day its limpid waters lure the traveller to take a sip and make a rest by the fountain.

The Strashimirovo group is situated to the north of the village which has given the name of the formation. The shortest way leading to the group is the path from the Central part of 'the Fossil Forest'. This group is located within a small gully, surrounded by an acacia grove, which makes the spot difficult to discover and well-hidden from the eyes of the visitor, coming here for the first time. The Strashimirovo columns are one of the most beautiful groups composed of about fifteen enormous pillars, reaching a height of 4-5 m, lined up in a straight array. All the columns widen in their middle part and become thinner again towards the top. The north sides of the columns are covered with rusty-reddish lichens while on the rest of their surface grow certain xerophilous plants.

The whole vicinity is distinguished by a peculiarly desert outlook. The ground round the pillars is covered with gravel and enormous masses of fine quartz sand. Eventhough only three or four of the columns have remained fully preserved, the partially desroyed ones look none the less impressive and enchanting. Notwithstanding their small number we remain dazzled by their



immense size and astonishing beauty. Among the most intriguing is the column which resembles a frozen fountain and the one which looks like a resting camel.

A group of columns which also belong to the region of Slunchevo is located north-west from the village, on a low-rising eminence, across the shortest distance to the village of Banovo. The group comprises about twenty cylindrical columns, so strongly thickened at their upper end that they seem like giant mushrooms when watched from a distance. Their porous structure is filled in by sphere-shaped lichens growing there in abundant amounts.

A high rocky peak known as 'Ulluli Kanara' (the Cliffs of the Buzzard) towers above the middle of Beloslav's lake north shore. Its steep cliffs having the air of an unapproachable feudal castle can be watched from the road between the towns of Beloslav and Povelianovo. Dozens of well-preserved cylindrical stone columns are located on the eastern ridge of this height. The whole vicinity is studded with round stone blocks called 'sheep's hunchbacks', on a ground spread with fine grayish-white sand - genuine bottom of an ancient sea.

The northern boundary of this group reaches the foot of a steep slope with 50 m displacement. The slope has sections of twenty-meter-high sheer cliffs. The place is known as 'Drenaka' (the Cornel-Tree Grove). In the foot of the slope, along its whole length, spreads a plain based upon a limestone slab, that can suffice for the building of several stadiums. Groups of immense cylindrical stone colossi stick up over the whole extent of the slope and hundreds of multistoreyedly arranged columns are sharply outlined in the sheer cliffs. They bear a striking resemblance with the Propilei in the ancient Acropolis of Athens. If the visitor stands on the border of the plain, from where this stone-work masterpiece hewn by Nature can be seen, he remains speechless and enchanted by the unforgettable view. All this was discovered at the time of sand



exavations, part of which were done by means of water spouts. The water washed away the sand, denuded and left the rocky formations in the shape that Nature has created them. Their discovery will probably facilitate and contribute to the explanation of 'the Fossil Forest' origin. If the visitor goes east of this group, he'll have to cross the deep ravine called 'Haramiatta' ('Haidouks' ravine). Not far from its left slope can be seen a small group of middle-sized columns. 200-300 meters away is situated the group 'Ostriya Kamak', by the ravine called "Suludzhite".

These columns are densely arranged on a small sandy platform which looks like an island among the exuberant surrounding vegetation. The Beloslav group is located right to the west of the town, which has given its name, in 'Dulgite Kamani' (the High Rocks) site. Another big group of columns is situated to the south, near 'Baba Virra', on both steep slopes of the 'Avren glade' ravine. West of the Beloslav group, on the highly rising 'Pchelina' (the Bee-Garden) site, there are a few almost unknown and seldom visited but very interesting columns.

Single columns, or ones gathered into groups of small number, are scattered throughout the entire area of 'the Fossil Forest'. The Banovo group is hidden in a small valley to the south-west of the village of Banovo, in 'Kanmarata' (the Crag) site. It is composed of several cylindrical columns as well as a few curious rocky formations. In 'Kanmarata', whose name comes from the nearby eminence, there is a number of stone sheds and some most lavishly picturesque shapes and images, sculptured by the erosion in the pliable cretaceous rocks. One of the most interesting visiting sites in the region of 'the Fossil Forest' is 'Temnata Douпка' (the Dark Hollow) cave, also known by the names 'Beloslavska' or 'the Cave'. It can most easily be approached from the Beloslav rail-station, which is only 0,5 km south-west from it. The cave, which is formed within eocenic sandstones, has 11m wide and 4,5 m high entrance, facing south-east. Inwards the cave vault declines to a height of 2,5 m, while its



width broadens to 14 m and then gradually narrows to 4,4 m. After this constriction follows a round cone-shaped hall with diameter of 11m, which is illuminated by the sun's rays coming from a natural chimney-aperture in the vault arch. The back wall of the hall has a small opening which is difficult to overcome unless one crawls in a lying position. On the other side the cave widens and continues at a considerable distance inwards. This innermost part of the cave is not well investigated and mapped out. From the entrance to the round hall the cave is dry and until recently inhabited by bats.

So far the cave hasn't been an object of systematic archaeological excavations. The drillings, made a couple of meters off the entrance, led to the discovery of bones and teeth of a wild horse, cave bear and cave hyaena, a flintstone fragment with visible traces of remodelling to make it usable as a tool, as well as a few pieces of prehistoric earthenware.

The found bone material clarifies certain questions related to the fauna in north-east Bulgaria in the diluvian period. Apart from that, the discovered materials give us a well-grounded reason to maintain that the cave was inhabited in the palaeolithic age. New findings in future excavations will provide more evidence about this eastern palaeolithic settlement, which can be considered outmost not only for the territory of Bulgaria but for the whole Balkan peninsula, too.



**Temnata Douпка (the Dark Hollow) cave**



## Thousands of Years Ago

'The Fossil Forest' uncovered yet another of its secrets. In 1935 and especially 1948, the eminent Czech geologist and palaeontologist Yaroslav Petrbrock found rough-hewn fragments of tools in the shifting sands. They belonged to the prehistoric people who lived here 25 000-30 000 years ago in the palaeolithic period. At the time of later research and excavations, made by our archaeologists in the region of the 'Fossil Forest', were discovered about fifteen more new deposits of cultural palaeolithic materials. For the first time in



**Tools of Labour from the Mesolithic Age**



Bulgaria were also unearthed finds from the mesolithic period. The found pieces of evidence were more than ten thousand most varied tools of labour and weapons, made from flint and quartzite, as well as thousands of stone splinters left after their moulding.

The unearthed mesolithic materials are exceptionally significant. Among them there are plenty of flint nuclei, used for the splitting of thinner or thicker lamellas and plates by means of quartz pestles, out of which were produced various multiform tools of labour, such as: knives, blades, single, double and round graters, chisels, augers, awls, etc. Especially interesting are the small flint instruments, called microliths - some of them no more than 1 cm in size - which used to have a complex implementation. These are small blades or cutting lamellas with a certain geometrical form, mainly of the following types: trapeziums, trapezoids, triangles, segments and gravettes. The great number of splinters and fragments found in these deposits confirm that the produce of this 'flint industry' was manufactured and fulfilled on location of the very same vicinity.

All these exceedingly valuable for the science of archaeology finds have shed considerable light upon the impenetrable darkness covering this remote past and elucidated lots of essential problems referring to the prehistoric development of mankind on our lands. They represent an emphatic proof for the existence of a mesolithic age on Bulgarian territory, which spans the period from the 10<sup>th</sup> to the 8<sup>th</sup> millennium B.C. They also prove that after the caves in Bulgaria during the late palaeolith were immensely flooded by the thawing snows and ice, life on our lands did not cease to exist. On the contrary, it continued in open-air settlements, such as those in 'the Fossil Forest' vicinity.



## The Fossil Forest - a Major Tourist Sight

Among the numerous landmarks in Bulgaria 'the Fossil Forest' occupies one of the leading positions. It represents an exclusively intriguing natural phenomenon, provoking the curiosity and inquisitiveness of the observer at the very first sight. This unique rocky creation has an international importance and was proposed for entering the global list of geological formations promoted by UNESCO. Apart from the scientific literature, 'the Fossil Forest' and its adjoining groups are registered in lots of European and transoceanic tourist guidebooks. They have also been used as the background for shooting a succession of Bulgarian, Russian, German and other feature films, as well as documentary productions of these cinematographies.

*In the past some columns were destroyed by ignorant treasure-hunters for the purpose of seeking hidden hoards while others were pulled down and used as construction material for roads and buildings. A small number of them was also demolished by earthquakes. These were mainly columns from the Beloslav and Slunchevo groups.*

This fascinating nook was proclaimed a natural reserve by the Bulgarian state in 1937. After the multiple expansion of its territory, nowadays it occupies an area of 250 000 hectares. The thousands of locust trees, which were planted here, in springtime fill the air with the sweet fragrance of their blossoms. Other beautiful ornamental trees and shrubs grow naturally round the Central group of 'the Fossil Forest'. The vegetation, which is as picturesque as the columns themselves, has given shelter to a numerous bird population: cuckooes, hoopoes, magpies, linnets, gold-finches, thistle-finches, nightingales and others. The cavities of some columns are inhabited by the screech-owl, the tawny-owl, the buzzard, the titmouse and the big tom-tit. In recent years swallow colonies have also come to settle in the vicinity.

On the golden sand can be noticed colourful grasshoppers, little ashy-gray lizards, as well as the more rare scarab beetle, the archer-snake and the big green lizard. Sometimes the lucky visitor may also come upon the tortoise, crawling slowly its way through the bushes.





Generally, the fauna is represented by 21 bird species, 7 reptile species and 7 mammal species.

The desert plants are the domineering type of vegetation in 'the Fossil Forest'. It's mainly xerophilous due to the small amount of moisture in the sandy-gravel soil, poor in nutritious substances. Most typical are *Festuca arenicola* (popular as fescue), *Arenaria rigida*, *Carex ligerica*, *Silene thymifolia*, *Alyssum borvaeaeanum* and the more common wild carnation, mullein (Aaron's rod), cynodon, corn-flower, blue-bottle, centaury and other drought-loving plants. The total number of vegetable species is about 240, ten of which are considered exceedingly rare. Lately the sandy soil of 'the Fossil Forest' has given rise to an interesting kind of cactaceous species with pretty yellow blossoms.

A beautiful pavillion, where each visitor can be supplied with post-cards and literature about 'the Fossil Forest', is built at the Central group of columns. Thanks to the proximity of towns and villages, and the available means of transport, it has become an easily accessible, preferred and attractive tourist site. Annually it's visited by thousands of tourists, excursionists and visitors not only from our country but from all over the world. What follows are the words of a group of tourists from the Russian cities of Moscow and Rostov, written in the special book for impressions of 'the Fossil Forest': 'We visited this original nook of your country and were amazed by this marvel of Nature. The extraordinary and unforgettable sight will remain for ever in our memory. Thank you, dear Bulgarian friends, for having succeeded in the preservation of 'the Fossil Forest' in the state that Nature has created it.' 'Magnificent creation of Nature, which reminded me of Carnac in Bretagne', wrote the Frenchman Boureau.

'Exclusively remarkable natural phenomenon', 'unmatched and unique beauty', 'priceless treasure', 'admirable, enchanting and stupendous sight', 'geological renown', 'superb natural view' - these are only a few of the thousands delighted, enthusiastic and exalted responses of 'the Fossil Forest' visitors. These spontaneous impressions belong to people like Ferdinand Quedros from the distant land of Peru, Nina Rosier from sunny France, Tamash Bella from Hungary, Yezhi Cheshak and Danuta Kozakievich from Poland, Lihida el Anne from Iraque, Klaus Rempe from



Berlin and thousands other friends of Bulgaria, who have spent memorable moments here. 'The Fossil Forest' deserves a special attention and has to be visited by all genuine connoisseurs of the Beauty of Nature. Welcome!

**Columns  
from the  
Slanchevo group**





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